



PHYSICS NMDCAT

TOPIC WISE TEST (UNIT- 5)

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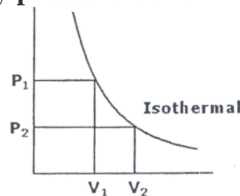
SAEED MDCAT

03418729745(WhatsApp Groups)

TOPIC:

✓ Thermodynamics

- Q.1** If an ideal gas is isothermally expanded, its internal energy
A. Decreases
B. Remains same
C. Increases
D. None of these
- Q.2** The first law of thermodynamics is concerned with conservation of
A. Molecules
B. Moles
C. Energy
D. Temperature
- Q.3** In an isothermal change an ideal gas obeys
A. Charles Law
B. Boyle's Law
C. Both "A" and "B"
D. None of these
- Q.4** If 20J of work is done in compressing a gas adiabatically the change in internal energy is equal to
A. 20J
B. 10J
C. -20J
D. 200J
- Q.5** During adiabatic compression of a gas its temperature
A. Remains constant
B. Falls
C. Become zero
D. Rise
- Q.6** A system does 600J of work at the same time has its internal energy increased by 320J. How much heat has been supplied.
A. 280 J
B. 600 J
C. 920 J
D. 20 J
- Q.7** The internal energy of a monoatomic ideal gas is
A. Only kinetic energy
B. Partly kinetic and partly potential energies
C. Only potential energy
D. None of these
- Q.8** The direction of flow of heat between two bodies is determined by
A. Internal energy
B. Total energy
C. Kinetic energy
D. None of these
- Q.9** What will be the mathematical form of first law of thermodynamics for a system whose variation of volume by pressure is shown?



- A. $Q = U$
B. $Q = U/W$
C. $U = W$
D. $Q = W$
- Q.10 Internal energy is a unique function of state because change in internal energy.**
A. Does not depend on path
B. Corresponds to an adiabatic
C. Depends on path
D. Corresponds to an isothermal process.
- Q.11 The internal energy of piece of lead when beaten by a hammer will.**
A. Increase
B. Remain constant
C. Decrease
D. Some times increase and some time decrease



Q.12 If $C_v = \frac{5}{2}R$ then C_p in

- A. $\frac{2}{5}R$ B. $\frac{2R}{7}$
C. $\frac{7}{2}R$ D. $\frac{5}{2}R$

Q.13 The equation $\Delta Q = \Delta U$ represents a process

- A. Isochoric B. Isothermal
C. Isobaric D. None

Q.14 Starting with the same initial conditions, an ideal gas expands from volume V_1 to V_2 in three different ways. The work done by the gas is W_1 if the process is purely isothermal, W_2 if purely isobaric and W_3 if purely adiabatic. Then

- A. $W_2 > W_1 > W_3$ B. $W_2 > W_3 > W_1$
C. $W_1 > W_2 > W_3$ D. $W_1 > W_3 > W_2$

Q.15 The molar heat capacity of an ideal gas

- A. Cannot be negative B. Must lie in the range $C_v \leq C \leq C_p$
C. Must be equal to either C_v or C_p D. May have any value between $-\infty$ and $+\infty$

Q.16 In an adiabatic process, $PV^\gamma = \text{constant}$; the value ' γ ' is

- A. $\frac{C_v}{C_p}$ B. $\frac{R}{C_v} - 1$
C. $1 - \frac{R}{C_v}$ D. $1 + \frac{R}{C_v}$

Q.17 When the piston of a bicycle pump with a blocked outlet is pushed rapidly to decrease the volume of air; then which one of the following is incorrect for the air inside the pump

- A. Internal energy increases
B. Mean translational K.E of molecules increases
C. Temperature increases
D. Work done is positive

Q.18 A gas in an insulated cylinder is compressed rapidly and its internal energy increases by 25 J. Work done during this process is

- A. 25 J B. 50 J
C. -25 J D. -50 J

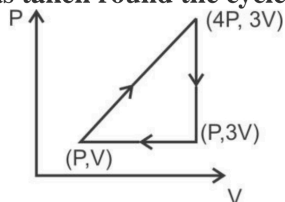
Q.19 Which statement about the first law of thermodynamics is correct?

- A. The heating of a system equal to the increase of its internal energy plus the work done on the system.
B. The increase in the internal energy of system equal the heating of the system plus the work done by the system
C. The increase in the internal energy of a system equal the heating of the system minus the work done by the system
D. The work done on a system equals the increase of its thermal energy plus the heating of the system

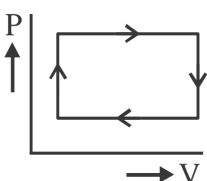
Q.20 In which process the P-V indicator diagram is straight line parallel to volume axis?

- A. Isobaric B. Adiabatic
C. Isothermal D. Isochoric

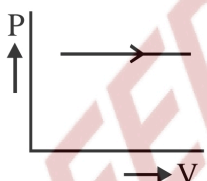
Q.21 An ideal monatomic gas has taken round the cycle, work done during the cycle is:



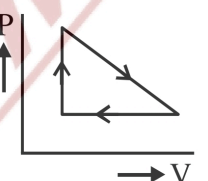


- A. Zero
C. $6PV$
B. $3PV$
D. $9PV$
- Q.22** We consider a thermodynamic system. If ΔU represents the increase in its energy and W the work done by the system, which of the following statements is true?
A. $\Delta U = -W$ in an isothermal process
B. $\Delta U = -W$ in an isothermal process
C. $\Delta U = -W$ in an adiabatic process
D. $\Delta U = -W$ in an adiabatic process
- Q.23** The difference between the molar specific heat at constant pressure and the molar specific heat at constant volume for an ideal gas is:
A. The Boltzman constant k
B. The universal gas constant R
C. The Avogadro constant N_A
D. kT
- Q.24** The amount of heat energy required to raise the temperature of a body of mass 1 kg through 1 K is called:
A. Specific heat
B. Molar specific heat
C. Heat capacity
D. Heat of vaporization
- Q.25** If C_p and C_v are the molar specific heats of a gas at constant pressure and volume respectively then the ratio of adiabatic and isothermal moduli of elasticity will be:
A. $\frac{C_p - C_v}{C_p}$
B. $\frac{C_v}{C_p}$
C. $C_p C_v$
D. $\frac{C_p}{C_v}$
- Q.26** The indicator diagrams representing maximum and minimum amounts of work done are respectively
- 

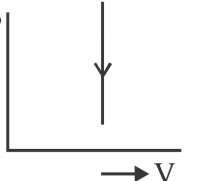
A.



B.



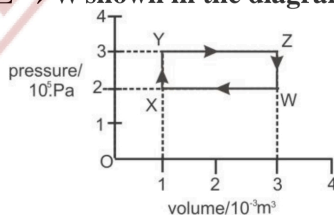
C.



D.
- A. (A) and (C)
B. (C) and (D)
C. (C) and (B)
D. (B) and (D)
- Q.27** The number of specific heats for a gas system is
A. 1
B. 3
C. 2
D. Infinite
- Q.28** Two systems are in thermal equilibrium. The quantity which is common for them is
A. Heat
B. Specific heat
C. Momentum
D. Temperature
- Q.29** A cycle tyre bursts suddenly. This represents an
A. Isothermal process
B. Isochoric process
C. Isobaric process
D. Adiabatic process
- Q.30** A gas is being compressed adiabatically. The specific heat of the gas during compression is
A. Zero
B. Finite but non zero
C. Infinite
D. Undefined
- Q.31** An isochoric process is one which take place at
A. Constant internal energy
B. Constant volume
C. Constant entropy
D. Constant pressure
- Q.32** Heat leaves the system is taken as
A. Positive
B. Neither negative nor positive
C. Negative
D. Zero
- Q.33** In an adiabatic process, there is no
A. Change in temperature
B. Exchange of heat
C. Change in internal energy
D. Work done
- Q.34** As $C_p - C_v = R$ shows that $C_p > C_v$. What is also true?

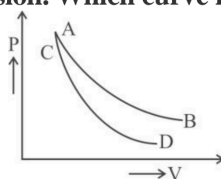


- A. $\Delta T_p > \Delta T_v$
B. Both "A" and "B"
C. $\Delta U_p > \Delta U_v$
D. $\Delta U_p = \Delta U_v$
- Q.35 Sound passes through air under the following process**
A. Isobaric
B. Isothermal
C. Adiabatic
D. Both B and C
- Q.36 Suppose volume of gas in a cylinder is 3 cm^3 , if the piston is kept fixed and gas is heated from 5°C to 12°C then the work done is**
A. 2.3 J
B. 21 J
C. Zero
D. 25 J
- Q.37 Thermodynamic is the study of relationship between**
A. Heat & Surrounding
B. Heat & other form of energy
C. Heat & Liquid
D. Heat & chemical energy
- Q.38 In an adiabatic process**
A. $W = -\Delta U$
B. $-W = \Delta U$
C. $\Delta Q = 0$
D. All of these
- Q.39 The curve represents isothermal process is called**
A. Isotherm
B. Adiabatic
C. Both "A" and "C"
D. Either "A" or "C"
- Q.40 Which one is not adiabatic process**
A. Escape of air from burst tyre
B. Cloud formation
C. Slow expansion
D. None
- Q.41 Heat added at constant volume of a gas is used to**
A. To do external work
B. To increase its internal energy
C. Either "A" or "C"
D. Both "A" and "C"
- Q.42 Heat energy added to a system under isothermal conditions appears as**
A. Work done by the system
B. Work done on the system
C. Increase in internal energy
D. Increase in temperature
- Q.43 The area under a curve on P-V diagram represents**
A. The state of a system
B. The work done on or by the system
C. The work done in a cyclic process
D. Internal energy of the system
- Q.44 A gas undergoes the cycle of pressure and volume changes $W \rightarrow X \rightarrow Y \rightarrow Z \rightarrow W$ shown in the diagram.**



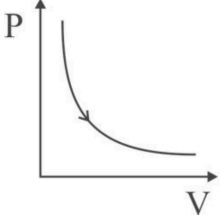
What is the net work done by the gas?

- A. -600 J
B. 200 J
C. 0 J
D. -200 J
- Q.45 In the figure curves AB and CD represent the relation between pressure P and volume V of an ideal gas. One of the curves represents on isothermal expansion and the other represents an adiabatic expansion. Which curve represents an adiabatic expansion?**

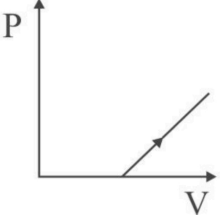


- A. Curve AB
B. Curve CD
C. Both "a" and "b"
D. None of these
- Q.46 A gas is compressed at a constant pressure of 50 N/m^2 from a volume of 10 m^3 to a volume of 4 m^3 . Energy of 100 J then added to the gas by heating. Its internal energy is**
A. increased by 400 J
B. increased by 200 J

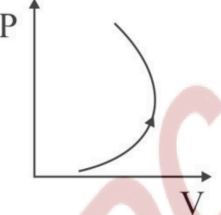


- C. increased by 100 J
D. decreased by 200 J
- Q.47** Work done by air when it expands from 50 litres to 150 litres at a constant pressure of 2 atmospheres is
A. 2×10^4 joules
B. 2×100 joules
C. $2 \times 10^5 \times 100$ joules
D. $2 \times 10^{-5} \times 100$ joules
- Q.48** If $C_v = \frac{3}{2}R$; then what is γ ?
A. $\frac{5}{2}$
B. $\frac{3}{5}$
C. $\frac{5}{3}$
D. $\frac{2}{5}$
- Q.49** Which of the following represents an isothermal expansion.
- 

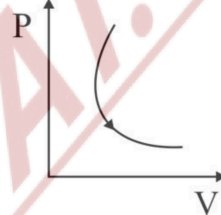
A.



B.



C.



D.
- Q.50** If the amount of heat given to a system is 35J and amount of work done by the system is -15J then the change in the internal energy of the system is
A. 50J
B. 30J
C. 20J
D. -50J

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Physics

1- B	11- A	21- B	31- B	41- B
2- C	12- C	22- C	32- C	42- A
3- B	13- A	23- B	33- B	43- B
4- A	14- A	24- A	34- D	44- B
5- D	15- D	25- D	35- C	45- B
6- C	16- D	26- D	36- C	46- A
7- A	17- D	27- C	37- B	47- A
8- D	18- C	28- D	38- D	48- B C
9- D	19- C	29- D	39- A	49- A
10- A	20- A	30- A	40- C	50- C

Phy-5